

**HEFTY[®] II STAINLESS
SEMIAUTOMATIC, SOLID STATE CONTROLLED
VOLTAGE SENSING WIRE FEEDER**

For the Following Specs:

- 100052-1



OWNER'S MANUAL Number **430429-456** (Rev AB)
Revised June 5, 2000

IMPORTANT: Read these instructions before installing, operating, or servicing this system.

THERMAL ARC INC., TROY, OHIO 45373-1085, U.S.A.

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DIAGRAMS

WARRANTY

INTRODUCTION

How To Use This Manual:

This Owner's Manual usually applies to just the underlined specification or part numbers listed on the cover. If none are underlined, they are all covered by this manual.

Throughout this manual, the words **WARNING**, **CAUTION**, and **NOTE** may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

WARNING gives information regarding possible personal injury. Warnings will be enclosed in a box such as this.

CAUTION refers to possible equipment damage. Cautions will be shown in bold type.

NOTE offers helpful information concerning certain operating procedures. Notes will be shown in italics.

Equipment Identification:

The unit's identification number (specification or part number), model, and serial number usually

appear on a nameplate attached to the control panel. In some cases, the nameplate may be attached to the rear panel. Equipment which does not have a control panel such as gun and cable assemblies is identified only by the specification or part number printed on the shipping container. Record these numbers for future reference.

Receipt Of Equipment:

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to Thermal Arc, Order Department, 2200 Corporate Drive, Troy, Ohio 45373-1085. Include all equipment identification numbers as described above along with a full description of the parts in error.

Move the equipment to the installation site before uncrating the unit. Use care to avoid damaging the equipment when using bars, hammers, etc., to uncrate the unit.

Additional copies of this manual may be purchased by contacting Thermal Arc at the address given above. Include the Owner's Manual number and equipment identification numbers.

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ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS



WARNING

ARC WELDING can be hazardous.

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR. DO NOT LOSE THESE INSTRUCTIONS. READ OPERATING/INSTRUCTION MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.

Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld. Certain of the practices apply to equipment connected to power lines; other practices apply to engine driven equipment.

Safe practices are outlined in the American National Standard Z49.1 entitled: **SAFETY IN WELDING AND CUTTING**. This publication and other guides to what you should learn before operating this equipment are listed at the end of these safety precautions.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.

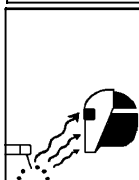


ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.

6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workpiece to a good electrical (earth) ground.
11. Do not touch electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
14. Wear a safety harness to prevent falling if working above floor level.
15. Keep all panels and covers securely in place.



ARC RAYS can burn eyes and skin; NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

1. Wear a welding helmet fitted with a proper shade of filter (see ANSI Z49.1 listed in Safety Standards) to protect your face and eyes when welding or watching.
2. Wear approved safety glasses. Side shields recommended.
3. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved ear plugs or ear muffs if noise level is high.

Eye protection filter shade selector for welding or cutting (goggles or helmet), from AWS A6.2-73.

Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade No.	Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade No.
Torch soldering	—	2	Gas metal-arc welding (MIG)		
Torch brazing	—	3 or 4	Non-ferrous base metal	All	11
Oxygen cutting			Ferrous base metal	All	12
Light	Under 1 in., 25 mm	3 or 4	Gas tungsten arc welding (TIG)	All	12
Medium	1 to 6 in., 25-150 mm	4 or 5	Atomic hydrogen welding	All	12
Heavy	Over 6 in., 150 mm	5 or 6	Carbon arc welding	All	12
Gas welding			Plasma arc welding	All	12
Light	Under 1/8 in., 3 mm	4 or 5	Carbon arc air gouging		
Medium	1/8 to 1/2 in., 3-12 mm	5 or 6	Light		12
Heavy	Over 1/2 in., 12 mm	6 or 8	Heavy		14
Shielded metal-arc welding (stick) electrodes	Under 5/32 in., 4 mm	10	Plasma arc cutting		
	5/32 to 1/4 in., 4 to 6.4 mm	12	Light	Under 300 Amp	9
	Over 1/4 in., 6.4 mm	14	Medium	300 to 400 Amp	12
			Heavy	Over 400 Amp	14

ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS

Instruction 830001



FUMES AND GASES can be hazardous to your health.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

1. Keep your head out of the fumes. Do not breathe the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.

4. Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for metals, consumables, coatings, and cleaners.
5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.
6. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.



WELDING can cause fire or explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.

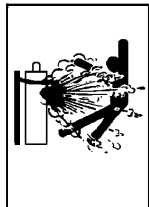
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
11. Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.



FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.



CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

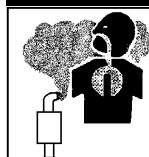
1. Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.

3. Keep cylinders away from any welding or other electrical circuits.
4. Never allow a welding electrode to touch any cylinder.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.



WARNING

ENGINES can be hazardous.



ENGINE EXHAUST GASES can kill.

Engines produce harmful exhaust gases.

1. Use equipment outside in open, well-ventilated areas.
2. If used in a closed area, vent engine exhaust outside and away from any building air intakes.

ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS
Instruction 830001

	ENGINE FUEL can cause fire or explosion. Engine fuel is highly flammable. 1. Stop engine before checking or adding fuel.	2. Do not add fuel while smoking or if unit is near any sparks or open flames. 3. Allow engine to cool before fueling. If possible, check and add fuel to cold engine before beginning job. 4. Do not overfill tank — allow room for fuel to expand. 5. Do not spill fuel. If fuel is spilled, clean up before starting engine.
	MOVING PARTS can cause injury. Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing. 1. Keep all doors, panels, covers, and guards closed and securely in place. 2. Stop engine before installing or connecting unit.	3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary. 4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery. 5. Keep hands, hair, loose clothing, and tools away from moving parts. 6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.
	SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin. Batteries contain acid and generate explosive gases.	1. Always wear a face shield when working on a battery. 2. Stop engine before disconnecting or connecting battery cables. 3. Do not allow tools to cause sparks when working on a battery. 4. Do not use welder to charge batteries or jump start vehicles. 5. Observe correct polarity (+ and -) on batteries.
	STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin. The coolant in the radiator can be very hot and under pressure.	1. Do not remove radiator cap when engine is hot. Allow engine to cool. 2. Wear gloves and put a rag over cap area when removing cap. 3. Allow pressure to escape before completely removing cap.

WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Sec. 25249.5 et seq.)

NOTE: Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, Biological Effects of Power Frequency Electric & Magnetic Fields — Background Paper, OTA-BP-E-63 (Washington, DC: U.S. Government Printing Office, May 1989): "... there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields can interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks."

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around the body.
4. Keep welding power source and cables as far away from body as practical.

About Pacemakers:

The above procedures are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

PRINCIPAL SAFETY STANDARDS

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

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PRECAUTIONS DE SECURITE EN SOUDAGE A L'ARC

MISE EN GARDE

LE SOUDAGE A L'ARC EST DANGEREUX

PROTEGEZ-VOUS, AINSI QUE LES AUTRES, CONTRE LES BLESSURES GRAVES POSSIBLES OU LA MORT. NE LAISSEZ PAS LES ENFANTS S'APPROCHER, NI LES PORTEURS DE STIMULATEUR CARDIAQUE (A MOINS QU'ILS N'AIENT CONSULTE UN MEDECIN). CONSERVEZ CES INSTRUCTIONS. LISEZ LE MANUEL D'OPERATION OU LES INSTRUCTIONS AVANT D'INSTALLER, UTILISER OU ENTREtenir CET EQUIPEMENT.

Les produits et procédés de soudage peuvent sauser des blessures graves ou la mort, de même que des dommages au reste du matériel et à la propriété, si l'utilisateur n'adhère pas strictement à toutes les règles de sécurité et ne prend pas les précautions nécessaires.

En soudage et coupage, des pratiques sécuritaires se sont développées suite à l'expérience passée. Ces pratiques doivent être apprises par étude ou entraînement avant d'utiliser l'équipement. Toute personne n'ayant pas suivi un entraînement intensif en soudage et coupage ne devrait pas tenter de souder. Certaines pratiques concernent les équipements raccordés aux lignes d'alimentation alors que d'autres s'adressent aux groupes électrogènes.

La norme Z49.1 de l'American National Standard, intitulée "SAFETY IN WELDING AND CUTTING" présente les pratiques sécuritaires à suivre. Ce document ainsi que d'autres guides que vous devriez connaître avant d'utiliser cet équipement sont présentés à la fin de ces instructions de sécurité.

SEULES DES PERSONNES QUALIFIEES DOIVENT FAIRE DES TRAVAUX D'INSTALLATION, DE REPARATION, D'ENTRETIEN ET D'ESSAI.

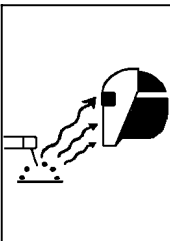


L'ELECTROCUTION PEUT ETRE MORTELLE.

Une décharge électrique peut tuer ou brûler gravement. L'électrode et le circuit de soudage sont sous tension dès la mise en circuit. Le circuit d'alimentation et les circuits internes de l'équipement sont aussi sous tension dès la mise en marche. En soudage automatique ou semi-automatique avec fil, ce dernier, le rouleau ou la bobine de fil, le logement des galets d'entraînement et toutes les pièces métalliques en contact avec le fil de soudage sont sous tension. Un équipement inadéquatement installé ou inadéquatement mis à la terre est dangereux.

1. Ne touchez pas à des pièces sous tension.
2. Portez des gants et des vêtements isolants, secs et non troués.
3. Isolez-vous de la pièce à souder et de la mise à la terre au moyen de tapis isolants ou autres.
4. Déconnectez la prise d'alimentation de l'équipement ou arrêtez le moteur avant de l'installer ou d'en faire l'entretien. Bloquez le commutateur en circuit ouvert ou enlevez les fusibles de l'alimentation afin d'éviter une mise en marche accidentelle.
5. Veuillez à installer cet équipement et à le mettre à la terre selon le manuel d'utilisation et les codes nationaux, provinciaux et locaux applicables.

6. Arrêtez tout équipement après usage. Coupez l'alimentation de l'équipement s'il est hors d'usage ou inutilisé.
7. N'utilisez que des porte-électrodes bien isolés. Ne jamais plonger les porte-électrodes dans l'eau pour les refroidir. Ne jamais les laisser traîner par terre ou sur les pièces à souder. Ne touchez pas aux porte-électrodes raccordés à deux sources de courant en même temps. Ne jamais toucher quelqu'un d'autre avec l'électrode ou le porte-électrode.
8. N'utilisez pas de câbles électriques usés, endommagés, mal épissés ou de section trop petite.
9. N'enroulez pas de câbles électriques autour de votre corps.
10. N'utilisez qu'une bonne prise de masse pour la mise à la terre de la pièce à souder.
11. Ne touchez pas à l'électrode lorsqu'en contact avec le circuit de soudage (terre).
12. N'utilisez que des équipements en bon état. Réparez ou remplacez aussitôt les pièces endommagées.
13. Dans des espaces confinés ou mouillés, n'utilisez pas de source de courant alternatif, à moins qu'il soit muni d'un réducteur de tension. Utilisez plutôt une source de courant continu.
14. Portez un harnais de sécurité si vous travaillez en hauteur.
15. Fermez solidement tous les panneaux et les capots.



LE RAYONNEMENT DE L'ARC PEUT BRÛLER LES YEUX ET LA PEAU; LE BRUIT PEUT ENDOMMAGER L'OÛIE.

L'arc de soudage produit une chaleur et des rayons ultraviolets intenses, susceptibles de brûler les yeux et la peau. Le bruit causé par certains procédés peut endommager l'ouïe.

1. Portez une casque de soudeur avec filtre oculaire de nuance appropriée (consultez la norme ANSI Z49 indiquée ci-après)

pour vous protéger le visage et les yeux lorsque vous soudez ou que vous observez l'exécution d'une soudure.

2. Portez des lunettes de sécurité approuvées. Des écrans latéraux sont recommandés.
3. Entourez l'aire de soudage de rideaux ou de cloisons pour protéger les autres des coups d'arc ou de l'éblouissement; avertissez les observateurs de ne pas regarder l'arc.
4. Portez des vêtements en matériaux ignifuges et durables (laine et cuir) et des chaussures de sécurité.
5. Portez un casque antibruit ou des bouchons d'oreille approuvés lorsque le niveau de bruit est élevé.

PRECAUTIONS DE SECURITE EN SOUDAGE A L'ARC
Instruction 830002

SELECTION DES NUANCES DE FILTRES OCULAIRES POUR LA PROTECTION DES YEUX EN COUPAGE ET SOUDAGE
 (selon AWS A 8.2-73)

Opération de Coupage ou soudage	Dimension d'électrode ou Epaisseur de métal ou Intensité de courant	Nuance de de filtre oculaire
Brasage tendre au chalumeau	toutes conditions	2
Brasage fort au chalumeau	toutes conditions	3 ou 4
Oxycoupage		
mince	moins de 1 po. (25 mm)	2 ou 3
moyen	de 1 à 6 po. (25 à 150 mm)	4 ou 5
épais	plus de 6 po. (150 mm)	5 ou 6
Soudage aux gaz		
mince	moins de 1/8 po. (3 mm)	4 ou 5
moyen	de 1/8 à 1/2 po. (3 à 12 mm)	5 ou 6
épais	plus de 1/2 po. (12 mm)	6 ou 8
Soudage à l'arc avec electrode enrobées (SMAW)	moins de 5/32 po. (4 mm)	10
	de 5/32 à 1/4 po. (4 à 6.4 mm)	12
	plus de 1/4 po. (6.4 mm)	14
Soudage à l'arc sous gaz avec fil plein (GMAW)		
métaux non-ferreux	toutes conditions	11
métaux ferreux	toutes conditions	12
Soudage à l'arc sous gaz avec électrode de tungstène (GTAW)	toutes conditions	12
Soudage à l'hydrogène atomique (AHW)	toutes conditions	12
Soudage à l'arc avec électrode de carbone (CAW)	toutes conditions	12
Soudage à l'arc Plasma (PAW)	toutes dimensions	12
Gougeage Air-Arc avec électrode de carbone		
mince		12
épais		14
Coupage à l'arc Plasma (PAC)		
mince	moins de 300 ampères	9
moyen	de 300 à 400 ampères	12
épais	plus de 400 ampères	14



LES VAPEURS ET LES FUMÉES SONT DANGEREUSES POUR LA SANTÉ.

Le soudage dégage des vapeurs et des fumées dangereuses à respirer.

- Eloignez la tête des fumées pour éviter de les respirer.
- A l'intérieur, assurez-vous que l'aire de soudage est bien ventilée ou que les fumées et les vapeurs sont aspirées à l'arc.
- Si la ventilation est inadéquate, portez un respirateur à adduction d'air approuvé.
- Lisez les fiches signalétiques et les consignes du fabricant relatives aux métaux, aux produits consommables, aux revêtements et aux produits nettoyants.
- Ne travaillez dans un espace confiné que s'il est bien ventilé; sinon, portez un respirateur à adduction d'air. Les gaz protecteurs de soudage peuvent déplacer l'oxygène de l'air et ainsi causer des malaises ou la mort. Assurez-vous que l'air est propre à la respiration.
- Ne soudez pas à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir avec des vapeurs et former des gaz hautement toxiques et irritants.
- Ne soudez des tôles galvanisées ou plaquées au plomb ou au cadmium que si les zones à souder ont été grattées à fond, que si l'espace est bien ventilé; si nécessaire portez un respirateur à adduction d'air. Car ces revêtements et tout métal qui contient ces éléments peuvent dégager des fumées toxiques au moment du soudage.



LE SOUDAGE PEUT CAUSER UN INCENDIE OU UNE EXPLOSION

L'arc produit des étincelles et des projections. Les particules volantes, le métal chaud, les projections de soudure et l'équipement surchauffé peuvent causer un incendie et des brûlures. Le contact accidentel de l'électrode ou du fil-électrode avec un

objet métallique peut provoquer des étincelles, un échauffement ou un incendie.

1. Protégez-vous, ainsi que les autres, contre les étincelles et du métal chaud.
2. Ne soudez pas dans un endroit où des particules volantes ou des projections peuvent atteindre des matériaux inflammables.
3. Enlevez toutes matières inflammables dans un rayon de 10, 7 mètres autour de l'arc, ou couvrez-les soigneusement avec des bâches approuvées.

4. Méfiez-vous des projections brûlantes de soudage susceptibles de pénétrer dans des aires adjacentes par de petites ouvertures ou fissures.
5. Méfiez-vous des incendies et gardez un extincteur à portée de la main.
6. N'oubliez pas qu'une soudure réalisée sur un plafond, un plancher, une cloison ou une paroi peut enflammer l'autre côté.
7. Ne soudez pas un récipient fermé, tel un réservoir ou un baril.
8. Connectez le câble de soudage le plus près possible de la zone de soudage pour empêcher le courant de suivre un long parcours inconnu, et prévenir ainsi les risques d'électrocution et d'incendie.
9. Ne dégelez pas les tuyaux avec un source de courant.
10. Otez l'électrode du porte-électrode ou coupez le fil au tube-contact lorsqu'inutilisé après le soudage.
11. Portez des vêtements protecteurs non huileux, tels des gants en cuir, une chemise épaisse, un pantalon revers, des bottines de sécurité et un casque.



LES ETINCELLES ET LES PROJECTIONS BRULANTES PEUVENT CAUSER DES BLESSURES.

Le piquage et le meulage produisent des particules métalliques volantes. En refroidissant, la soudure peut projeter du éclats de laitier.

1. Portez un écran facial ou des lunettes protectrices approuvées. Des écrans latéraux sont recommandés.
2. Portez des vêtements appropriés pour protéger la peau.



LES BOUTEILLES ENDOMMAGEES PEUVENT EXPLOSER

Les bouteilles contiennent des gaz protecteurs sous haute pression. Des bouteilles endommagées peuvent exploser. Comme les bouteilles font normalement partie du procédé de soudage, traitez-les avec soin.

1. Protégez les bouteilles de gaz comprimé contre les sources de chaleur intense, les chocs et les arcs de soudage.
2. Enchaînez verticalement les bouteilles à un support ou à un cadre fixe pour les empêcher de tomber ou d'être renversées.
3. Eloignez les bouteilles de tout circuit électrique ou de tout soudage.

4. Empêchez tout contact entre une bouteille et une électrode de soudage.
5. N'utilisez que des bouteilles de gaz protecteur, des détendeurs, des boyaux et des raccords conçus pour chaque application spécifique; ces équipements et les pièces connexes doivent être maintenus en bon état.
6. Ne placez pas le visage face à l'ouverture du robinet de la bouteille lors de son ouverture.
7. Laissez en place le chapeau de bouteille sauf si en utilisation ou lorsque raccordé pour utilisation.
8. Lisez et respectez les consignes relatives aux bouteilles de gaz comprimé et aux équipements connexes, ainsi que la publication P-1 de la CGA, identifiée dans la liste de documents ci-dessous.

MISE EN GARDE

LES MOTEURS PEUVENT ETRE DANGEREUX



LES GAZ D'ÉCHAPPEMENT DES MOTEURS PEUVENT ETRE MORTELS.

Les moteurs produisent des gaz d'échappement nocifs.

1. Utilisez l'équipement à l'extérieur dans des aires ouvertes et bien ventilées.
2. Si vous utilisez ces équipements dans un endroit confiné, les fumées d'échappement doivent être envoyées à l'extérieur, loin des prises d'air du bâtiment.



LE CARBURANT PEUT CAUSER UN INCENDIE OU UNE EXPLOSION.

Le carburant est hautement inflammable.

1. Arrêtez le moteur avant de vérifier le niveau de carburant ou de faire le plein.

2. Ne faites pas le plein en fumant ou proche d'une source d'étincelles ou d'une flamme nue.
3. Si c'est possible, laissez le moteur refroidir avant de faire le plein de carburant ou d'en vérifier le niveau au début du soudage.
4. Ne faites pas le plein de carburant à ras bord: prévoyez de l'espace pour son expansion.
5. Faites attention de ne pas renverser de carburant. Nettoyez tout carburant renversé avant de faire démarrer le moteur.

PRECAUTIONS DE SECURITE EN SOUDAGE A L'ARC

Instruction 830002

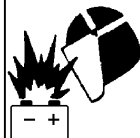


DES PIÈCES EN MOUVEMENT PEUVENT CAUSER DES BLESSURES.

Des pièces en mouvement, tels des ventilateurs, des rotors et des courroies peuvent couper doigts et mains, ou accrocher des vêtements amples.

1. Assurez-vous que les portes, les panneaux, les capots et les protecteurs soient bien fermés.
2. Avant d'installer ou de connecter un système, arrêtez le moteur.

3. Seules des personnes qualifiées doivent démonter des protecteurs ou des capots pour faire l'entretien ou le dépannage nécessaire.
4. Pour empêcher un démarrage accidentel pendant l'entretien, débranchez le câble d'accumulateur à la borne négative.
5. N'approchez pas les mains ou les cheveux de pièces en mouvement; elles peuvent aussi accrocher des vêtements amples et des outils.
6. Réinstallez les capots ou les protecteurs et fermez les portes après des travaux d'entretien et avant de faire démarrer le moteur.



DES ETINCELLES PEUVENT FAIRE EXPLOSER UN ACCUMULATEUR; L'ELECTROLYTE D'UN ACCUMULATEUR PEUT BRULER LA PEAU ET LES YEUX.

Les accumulateurs contiennent de l'électrolyte acide et dégagent des vapeurs explosives.

1. Portez toujours un écran facial en travaillant sur un accumulateur.
2. Arrêtez le moteur avant de connecter ou de déconnecter des câbles d'accumulateur.
3. N'utilisez que des outils anti-étincelles pour travailler sur un accumulateur.
4. N'utilisez pas une source de courant de soudage pour charger un accumulateur ou survolter momentanément un véhicule.
5. Utilisez la polarité correcte (+ et -) de l'accumulateur.



LA VAPEUR ET LE LIQUIDE DE REFROIDISSEMENT BRÛLANT SOUS PRESSION PEUVENT BRULER LA PEAU ET LES YEUX.

Le liquide de refroidissement d'un radiateur peut être brûlant et sous pression.

1. N'ôtez pas le bouchon de radiateur tant que le moteur n'est pas refroidi.
2. Mettez des gants et posez un torchon sur le bouchon pour l'ôter.
3. Laissez la pression s'échapper avant d'ôter complètement le bouchon.

PRINCIPALES NORMES DE SECURITE

Safety in Welding and Cutting, norme ANSI Z49.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

Safety and Health Standards, OSHA 29 CFR 1910, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, norme AWS F4.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

National Electrical Code, norme 70 NFPA, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, document P-1, Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, norme CSA W117.2 Association canadienne de normalisation, Standards Sales, 276 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, norme ANSI Z87.1, American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, norme 51B NFPA, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

DESCRIPTION OF EQUIPMENT

General:

The HEFTY II STAINLESS is a portable, solid state controlled, voltage sensing wire feeder that operates on arc voltage and can be used with most constant voltage (CV) and constant current (CC) DC-type power sources. The only connection required between the power source and the wire feeder is the welding cable.

The unique design of this wire feeder allows operation in a constant wire feed speed mode when used with CV power sources, and in a voltage sensing wire feed speed mode (wire feed speed varies with respect to arc voltage) when used with CC power sources.

The stainless steel case totally encloses the solid state control circuitry, welding wire, and wire drive system. A hinged, latched door allows quick and easy access to the welding wire and feedhead assembly that features quick change, gear-driven feed rolls and a hand operated knob for clamping the welding gun into the feedhead.

The HEFTY II STAINLESS comes with an abundance of **standard features**, which include: (1) on/off rocker switch, (2) wire feed speed control knob, (3) inch/purge switch, (4) carrying handle, (5) contactor, (6) gas valve, (7) CC/CV mode switch, (8) input circuit breaker for complete system protection, (9) electronic controlled protection circuitry to protect against an undervoltage, an overvoltage, a voltage spike, a shorted or locked motor, a shorted

contactor coil, and a shorted gas valve, (10) electronic controlled dynamic brake, (11) electronic controlled current limit to motor, (12) electronic controlled start circuit for improved arc starting, (13) low voltage gun trigger circuit for operator safety, and (14) a feed roll kit for 0.035 and 0.045 size filler wire.

The HEFTY II STAINLESS has been designed to comply with CSA NRTL/C and NEMA EW 3 standards.

Product Specifications:

Input Voltage Range	15 - 100 VDC
Input Frequency	0 Hz (DC)
Maximum Input Current.....	8 Amps
Wire Speed Range (Dependent On Arc Voltage)	50 - 700 IPM (1.3 - 17.8 MPM)
Wire Sizes	0.024 - 5/64" (0.6 - 2.0 mm)
Maximum Wire Spool Capacity	12" (304.8 mm) 30 Lbs. (13.6 kg)
Feed Rolls	2 (Both Gear Driven)
Welding Current (I)	330A at 60% Duty Cycle
Welding Gun Diameter	5/8" Nominal
Maximum Shielding Gas Inlet Pressure	75 PSI
Weight (Less Wire).....	38 Lbs. (17.2 kg)
Approvals	CSA NRTL/C NEMA EW 3

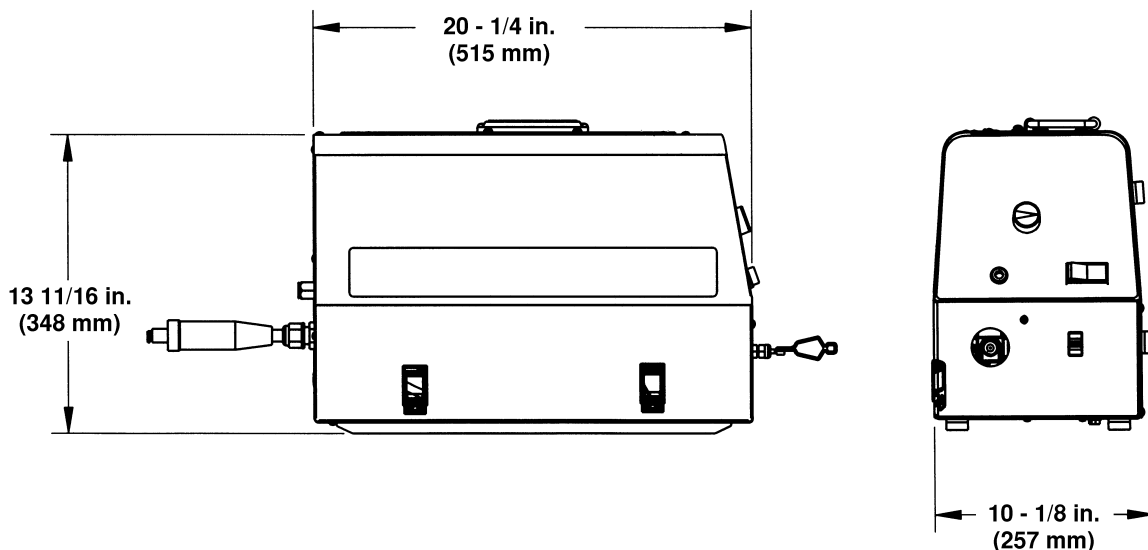
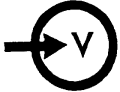


Figure 3-1 Dimensional Information

Features/Benefits:

1. Operates On Arc Voltage	A. Can be used with most constant current (CC) or constant voltage (CV) DC-type power sources B. No control cables required
2. Voltage Sensing Control Circuit With CC/CV Switch	A. Allows voltage sensing wire feed speed operation when used with CC power sources B. Allows constant wire feed speed operation when used with CV power sources
3. Solid State Circuitry	A. Improves wire speed accuracy B. Compensates for motor load variations C. Provides current limit to contactor, gas valve, and motor
4. Polarity Insensitive	A. Operates on either straight or reverse polarity
5. Electronic Controlled Start Circuit	A. Enhances arc starting performance with CC power sources
6. Electronic Brake	A. Solid state control of an electronic brake offers quick stopping of the motor to prevent wire overrun
7. Standard Contactor	A. Allows the welding wire to remain electrically "cold" until the gun switch trigger is depressed B. Increases operator safety
8. Standard Gas Valve	A. Controls the "on/off" flow of shielding gas
9. Powerful, Permanent Magnet DC Drive Motor	A. Accommodates the fast speed demands of small diameter wire B. Accommodates the low speed, high torque demands of large diameter wire
10. Replaceable Motor Brushes	A. Provides economical means of extending motor life
11. Needle Bearing Construction On Motor Output Shaft	A. Reduces friction and extends bearing life over a sleeving bearing
12. Input Circuit Breaker	A. Ensures complete system protection
13. Electronic Controlled Protection Circuitry	A. Protects electronics from undervoltage, overvoltage, and voltage spikes. B. Protects electronics from a shorted or locked motor C. Protects electronics from a shorted contactor coil D. Protects electronics from a shorted gas valve coil
14. Stainless Steel Case	A. Provides strength in a small, portable, light weight package B. Allows easy access for difficult to reach jobs
15. Standard Inch/Purge Switch	A. Allows "cold" inching of wire at set wire feed speed B. Allows purging of gas without running wire
16. Carrying Handle	A. Promotes portability
17. Quick Change Feed Rolls	A. Allows operator to change feed rolls without the use of tools B. Both feed rolls are gear driven for better feeding of wire
18. Gun Clamp Knob	A. Allows operator to secure welding gun without the use of tools
19. Feed Roll Pressure Release	A. Allows operator to adjust feed roll pressure without the use of tools B. Allows operator to change feed rolls or wire while retaining preset feed roll pressure

Meanings Of Markings And Graphical Symbols:

	Signifies an OFF position
	Signifies an ON position
	Signifies voltage input
	Signifies a wire feed function
	Signifies a voltage or voltage control
	Signifies amperage
	Signifies cycles per second
	Signifies a welding gun
	Signifies the feeding of wire towards the work piece with output voltage off
	Signifies a purging of gas
	Signifies a constant voltage characteristic
	Signifies a constant current (drooping) characteristic
	Signifies a circuit breaker in an electrical circuit
	Signifies welding current
	Signifies duty cycle

DESCRIPTION OF EQUIPMENT

%	Signifies a percentage
	Signifies an analog meter function

Front Panel Controls And Connections:

See Figure 3-2 for details.

1. WELDING GUN CABLE CONNECTION - The welding gun cable is connected to the wire feeder at this point. Connections must be tight; otherwise, arcing or overheating could result.

2. WIRE FEED SPEED CONTROL - This knob controls the wire feed speed. The wire feed speed control can be adjusted during setup or actual welding.

3. ARC VOLTAGE CONTROL (OPTIONAL) - This knob controls the arc voltage from the power

source. The arc voltage control can be adjusted during setup or actual welding.

NOTE: The power source must be in the remote position for this function to work.

4. ARC VOLTAGE METER (OPTIONAL) - The arc voltage meter displays the actual voltage output of the power source.

5. WIRE FEED SPEED METER (OPTIONAL) - The wire feed speed meter displays the actual wire feed speed output of the wire feeder.

6. POWER ON/OFF SWITCH - This switch controls input power only to the wire feeder and not to the power source.

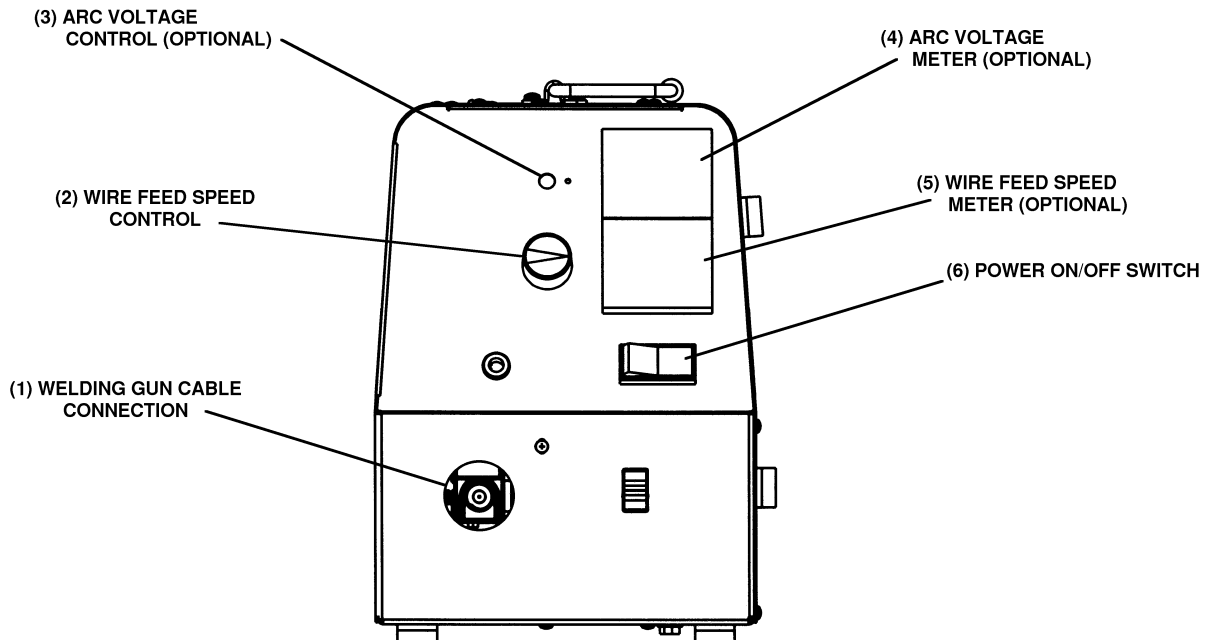


Figure 3-2 Front Panel Controls And Connections

DESCRIPTION OF EQUIPMENT

Internal Controls And Connections (Component Side):

See Figure 3-3 for details.

7. CC/CV MODE SWITCH - The CC position provides a voltage sensing wire feed speed mode of operation for use with constant current (CC) power sources. The CV position provides a constant wire feed speed mode of operation for use with constant voltage (CV) power sources.

NOTE: This switch does not select a CC or CV mode of operation. The mode of operation is set by the type of power source being used.

8. INPUT CIRCUIT BREAKER - This circuit breaker provides complete system protection for the wire feeder in the case of a fault or overload condition.

9. 12 VDC DRIVER PCB - The 12 VDC driver printed circuit board (PCB) is primarily responsible for controlling the contactor and gas valve.

10. MOTOR CONTROL PCB - The motor control printed circuit board (PCB) is primarily responsible for controlling the output speed of the motor.

11. CONTACTOR - The contactor controls the "on/off" flow of weld current from the power source. When the contactor is open, the welding wire is electrically "cold." When the contactor is closed, the welding wire is electrically "hot."

CAUTION: The contactor is rated for 330 amps of weld current at a 60% duty cycle. Exceeding the current or duty cycle ratings will damage or shorten the life of the contactor.

12. GAS VALVE - The gas valve controls the "on/off" flow of shielding gas through the welding gun.

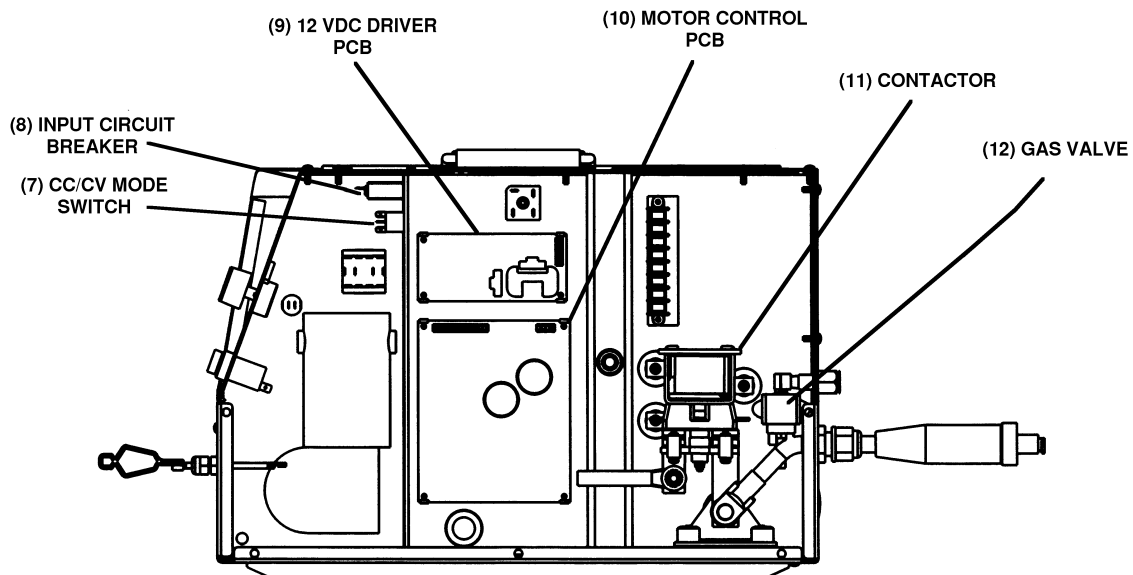


Figure 3-3 Internal Controls And Connections
(Component Side)

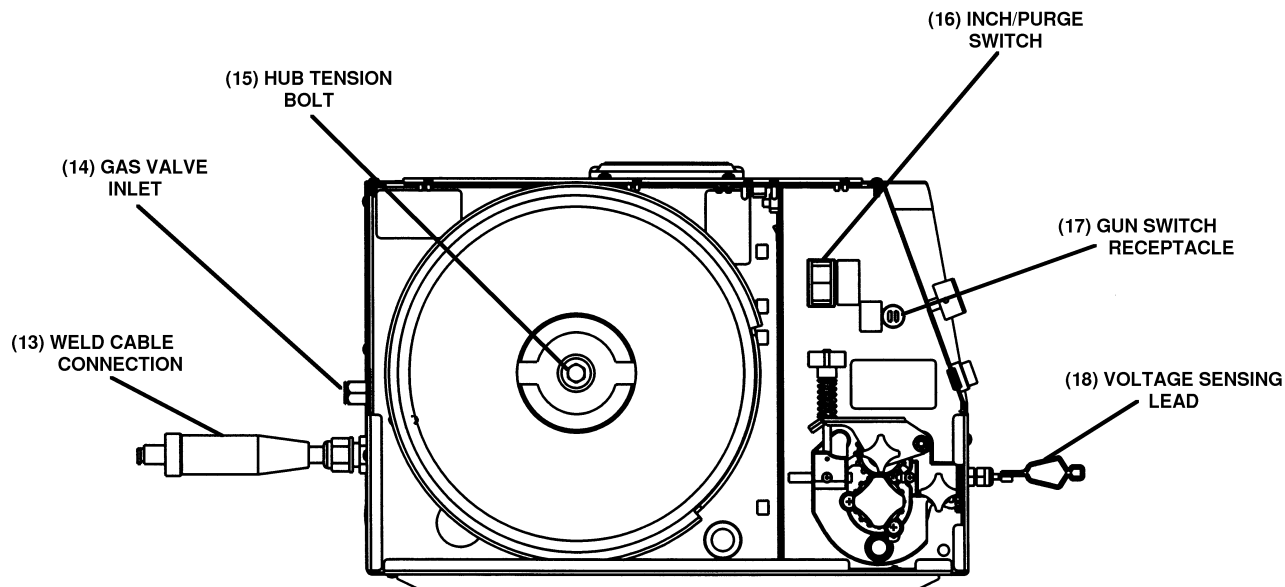


Figure 3-4 Internal Controls And Connections
(Wire Spool Side)

Internal Controls And Connections (Wire Spool Side):

See Figure 3-4 for details.

13. WELD CABLE CONNECTION - This is where the weld cable from the power source connects to the wire feeder. Connections must be tight; otherwise, arcing or overheating could result.

NOTE: The mating connector for the weld cable connection has been supplied with the unit and is located in the owner's manual bag.

14. GAS VALVE INLET - This is where the shielding gas hose (if used) is connected to the wire feeder.

15. HUB TENSION BOLT - The hub tension bolt is used to adjust the wire spool tension which acts as a mechanical brake to assist in the stopping of the welding wire at the completion of a weld.

16. INCH/PURGE SWITCH - Depressing the inch portion of the switch will feed wire at a speed set by the wire feed speed control. The wire will not be electrically "hot" when using the inch switch. Depressing the purge portion of the switch will allow shielding gas to flow out of the welding gun without feeding wire.

17. GUN SWITCH RECEPTACLE - The gun switch receptacle accepts the welding gun control wires. The gun switch receptacle is where a gun switch closure is inputted to the wire feeder.

18. VOLTAGE SENSING LEAD - This lead serves as an input power connection point for the wire feeder and must be connected to the work piece for proper operation. If the voltage sensing lead from the wire feeder and the weld cable from the power source are not connected to the work piece, the wire feeder will not work.

Description Of Feedhead Assembly:

See Figure 3-5 for details.

19. LOWER RETAINING KNOB - This knob is used to secure the drive feed roll. Remove this knob to change the drive feed roll.

20. INPUT WIRE GUIDE - This guide is required to direct the welding wire from the wire spool to the drive feed roll.

21. INPUT GUIDE LOCKSCREW - Tighten this screw to secure the input wire guide.

22. SPRING TENSION KNOB - Use the spring tension knob to adjust the amount of force the bearing feed roll exerts on the welding wire.

23. UPPER RETAINING KNOB - This knob is used to secure the bearing feed roll. Remove this knob to change the bearing feed roll.

24. OUTPUT GUIDE LOCKSCREW - Tighten this screw to secure the output wire guide.

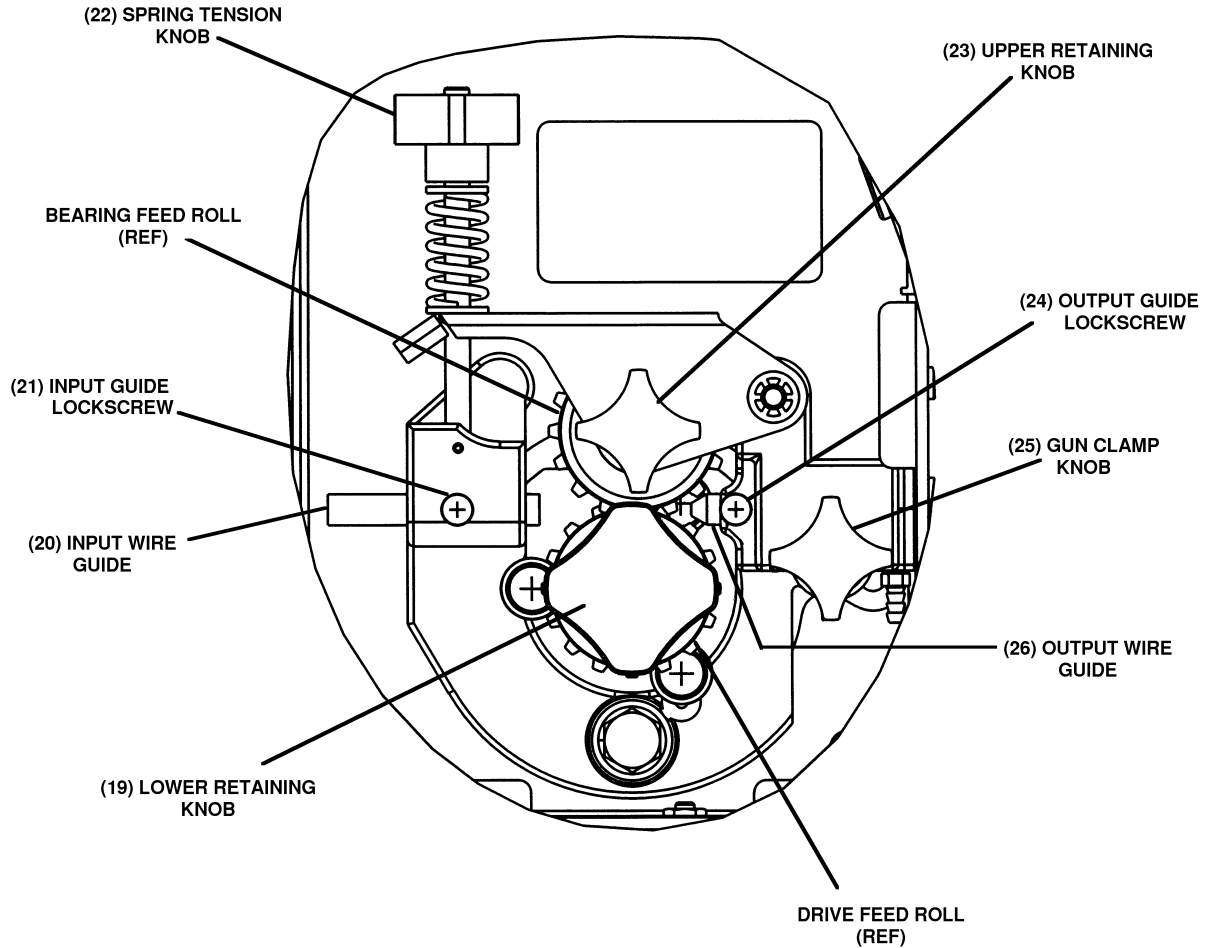


Figure 3-5 Feedhead Assembly

25. GUN CLAMP KNOB - Tighten this knob to secure the welding gun to the wire feeder.

26. OUTPUT WIRE GUIDE - This guide is required to direct the welding wire from the drive feed roll to the welding gun cable.

Power Source Compatibility:

Since the HEFTY II STAINLESS operates on arc voltage, it will work with most constant current (CC) or constant voltage (CV) DC-type power sources.

When connected to a HEFTY II STAINLESS, the maximum allowed open circuit voltage (OCV) of the power source is 100 VDC. Open circuit voltages exceeding 100 VDC will damage or shorten the life of the unit.

NOTE: Because of the high open circuit voltage associated with most CC power

sources, it is recommended to place the HEFTY II STAINLESS power switch in the OFF position when not welding. This procedure will prolong the life of electrical components connected to the power input lines.

When using the HEFTY II STAINLESS, there must be at least 15 VDC between the output terminals of the power source during standby and while welding. Otherwise, the unit will not have enough input voltage to operate properly.

A contactor is a standard component of the HEFTY II STAINLESS and allows the welding wire to remain electrically "cold" until the gun switch trigger is depressed. This contactor is rated for 330 amps of welding current at a 60% duty cycle. If the weld current or duty cycle rating is exceeded, the contactor will be damaged or its life shortened.

DESCRIPTION OF EQUIPMENT**Available Options:**

The following options are available for use with the HEFTY II STAINLESS. Some options are kits while others are individual items.

- | | |
|---|----------|
| 1. Spool Adapter - 10# | 375585 |
| 2. Spool Adapter - 15# | 375864-1 |
| 3. Coil Adapter - 14# | 375942A |
| 4. Feed Roll Kits
(See Diagrams Chapter) | 171435-x |
| 5. Control Pot Shaft Friction Lock | 402663 |

- | | |
|---|----------|
| 6. Flowmeter Kit | 870258 |
| 7. Tweco Gun Adapter | 870144 |
| 8. Remote Voltage Control Kits | |
| 14 Pin Amphenol, 100' | 870259-1 |
| 19 Pin Amphenol, 100' | 870259-2 |
| 9. Dinse Connector Conversion Kit | 870257 |
| 10. Wire Feed Speed
and Arc Voltage Meters | 870260 |

INSTALLATION

Connections:

See the System Outline drawing (170091) in the Diagrams chapter of this manual for details.

CAUTION: Make sure all connections are tight; otherwise, arcing or overheating could result.

1. Connect a weld cable from the power source to the weld cable connection of the wire feeder.
2. Connect a weld cable from the power source to the work connection.
3. Connect the voltage sensing lead from the wire feeder to the work connection.

WARNING: ELECTRIC SHOCK CAN KILL! DO NOT touch the metal portions of the voltage sensing lead when the power source output is on.

4. Make the proper gas line connection from the gas supply to the wire feeder gas valve (if gas will be used).
5. Attach the welding gun to the wire feeder.
6. Connect the welding gun switch leads to the wire feeder gun switch receptacle located inside the case of the wire feeder.

Installation Of Welding Wire Spool:

See Figures 3-4 and 3-5.

NOTE: The wire spool hub supplied with the unit is provided for mounting a 30 pound spool of wire. Optional adapters are available allowing a 10 or 15 pound spool of wire or a 14 pound coil of wire to be used.

1. Remove the wire spool hub nut by turning counterclockwise.
2. Slide the spool of wire over the wire spool hub, making sure that the alignment pin on the hub enters the hole in the backside of the wire spool.
3. Replace the wire spool hub nut and turn clockwise to a snug position.

NOTE: Install the welding wire spool so the wire feeds from the bottom of the spool into the input wire guide.

Adjustment Of Spool Tension:

Adjust the wire spool tension so the wire will feed freely into the input wire guide. However, the spool of welding wire must not "coast" when wire feeding stops. To adjust the wire spool tension, tighten or loosen the hub tension bolt accordingly (See Figure 3-4).

NOTE: Excessive tightening of the hub tension bolt will result in a shorter motor life.

Input And Output Wire Guide Installation:

Refer to Figure 3-5.

Install the input wire guide (the longer one) by loosening the input guide lock screw and inserting the guide into the hole in the feedhead assembly. The recessed end of the guide should be towards the wire spool. Adjust the guide so that it is clear of the feed rolls and tighten the input guide lock screw.

Install the output wire guide (with the conical end towards the feed rolls) in the same manner as the input guide. The conical end of the guide should be as close to the feed rolls as practical. Tighten the output guide lock screw.

NOTE: Before tightening the input and output guide lock screws, install the drive feed roll to help in the alignment of the wire guides.

Selection And Installation Of Feed Rolls:

NOTE: See feed roll kit drawing (supplied in the Diagrams chapter) to order feed roll kits. Kit includes a bearing roll, a drive roll, an input wire guide, and an output wire guide for a specific wire type and size.

For installation of feed rolls, refer to Figure 3-3.

For selection of feed roll styles, refer to Figure 4-1.

430429-456 INSTALLATION

Style 1 feed rolls consist of a flat, smooth bearing roll and a double, smooth, vee grooved drive roll. They feed .024 - .068" hard and tubular wire.

Style 2 feed rolls consist of a flat, knurled bearing roll and a double, smooth, vee grooved drive roll. They feed .030 - .045" hard and tubular wire.

Style 3 feed rolls consist of a double, knurled, vee grooved bearing roll and a double, knurled, vee grooved drive roll. They feed .045 - 5/64" hard and tubular wire.

Style 4 feed rolls consist of double, cog bearing and drive rolls. They feed .045 - .068" tubular wire.

Style 5 feed rolls consist of double, U-grooved bearing and drive rolls. They feed .035 - 3/64" soft wire.

NOTE: All grooved feed rolls have their wire size or range stamped on the side of the roll. On rolls with different size grooves, the outer (visible when installed) stamped wire size indicates the groove in use.

Bearing feed rolls are installed by unscrewing the upper retaining knob and removing the idler gear. The bearing feed roll retaining knob is then removed from the idler gear, and the bearing feed roll is placed over the lobes on the idler gear. The bearing feed roll retaining knob is replaced, and this assembly is returned and secured with the upper retaining knob.

Drive feed rolls are installed by removing the lower retaining knob, placing the drive feed roll over the lobes on the drive gear, and securing with the lower retaining knob.

NOTE: Installation of all styles of feed rolls for this feeder is identical.

Welding Gun Compatibility And Installation:

Refer to Figures 3-4 and 3-5.

The HEFTY II STAINLESS wire feeder is designed to be used with most welding guns. In some cases, a special adapter may be required.

To install the welding gun, simply loosen the gun clamp knob and insert the welding gun into the feedhead until it stops. Tighten the gun clamp knob

and connect the welding gun control wires to the gun switch receptacle.

NOTE: Before inserting the welding gun into the feedhead, make sure the gun clamp does not extend into the feedhead; otherwise, the welding gun cannot be properly inserted.

Threading Wire Into Feedhead:

Refer to Figure 3-5.

WARNING: ELECTRIC SHOCK CAN KILL! Make certain the power source and wire feeder are turned OFF. Do not turn the power ON until told to do so in these instructions.

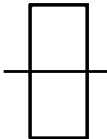
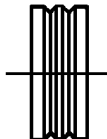
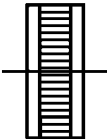
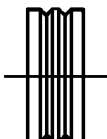
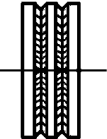
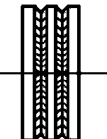
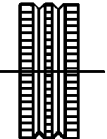
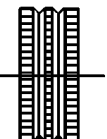
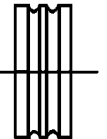
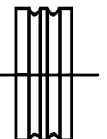
CAUTION: Use care when handling the spooled wire as the wire tends to "unravel" when loosened from the spool. Grasp the end of the wire firmly, and don't let it get away from you. Make sure that the end of the wire is straight and free of burrs.

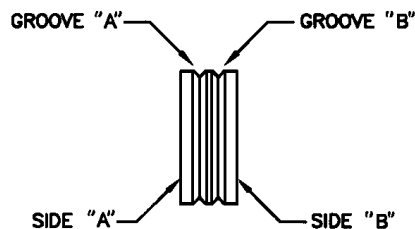
1. Place end of the welding wire into the input wire guide. Feed it through the guide and over the drive roll groove closest to the feedhead casting.
2. Pass the wire through the output wire guide and into the welding gun assembly.
3. Lock in position with the spring tension knob. To adjust the amount of force the bearing feed roll exerts on the welding wire, turn the spring tension knob clockwise for increased force or counterclockwise for decreased force.

NOTE: If the force applied to the wire is too great, the welding wire will "bird nest" in the feedhead and not feed properly.

4. Turn the welding machine and wire feeder ON, and set the wire feed speed control to midrange (See Figure 3-2). Remove contact tube from welding gun. See Gun Manual. Press the gun switch or INCH switch until wire feeds out past the gun nozzle. Place contact tube over the wire and screw into place and tighten. Cut wire off at about 1/4 inch (6 mm) from the nozzle.

WARNING: The welding wire is electrically “Hot” if wire is fed by depressing gun switch. Electrode contact to work piece will cause an arc with gun switch depressed.

FEED ROLL STYLES				
STYLE 1 SMALL HARD & SOFT WIRE	STYLE 2 HARD WIRE	STYLE 3 HARD & TUBULAR WIRE	STYLE 4 TUBULAR WIRE	STYLE 5 SOFT WIRE
FLAT  DOUBLE SMOOTH VEE 	FLAT KNURLED  DOUBLE SMOOTH VEE 	DOUBLE KNURLED VEE  DOUBLE KNURLED VEE 	DOUBLE COG  DOUBLE COG 	DOUBLE “U”  DOUBLE “U” 



NOTE: Number stamped on Side “A” indicates the wire size of Groove “B” and vice versa.

Figure 4-1 Feed Roll Styles

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OPERATION

Prewelding Procedure:

Follow all installation instructions for the welding power source, the welding gun, and the HEFTY II STAINLESS wire feeder before attempting to weld.

- 1. Make sure all necessary connections have been made (Refer to "Connections" in the Installation chapter of this manual).
- 2. Turn ON the power source and the wire feeder.
- 3. Set the CC/CV mode switch on the wire feeder to the proper position (See CC/CV Mode Switch in the Internal Controls And Connections section of this manual).
- 4. If shielding gas will be used, depress the purge switch or gun switch and adjust the flow of gas.

WARNING: If the gun switch is depressed, the wire feeder will feed electrically "hot" welding wire. If this "hot" welding wire touches the work piece, a welding arc will be established.

- 5. Depress the inch switch or gun switch and adjust the wire feed speed to the desired value by means of the wire feed speed control. The wire feed speed control can be adjusted during setup or while welding.

WARNING: If the gun switch is depressed, the wire feeder will feed electrically "hot" welding wire. If this "hot" welding wire touches the work piece, a welding arc will be established.

- 6. Adjust the voltage control (on a CV machine) or current control (on a CC machine) to the desired value. The voltage or current control can be adjusted during setup or while welding.
- 7. If using a CV power source, the output contactor on the power source will have to be energized. In most cases, this will require a jumper to be added to the power source or a switch on the power source to be turned on. Read the power source owner's manual for proper connections or settings required.

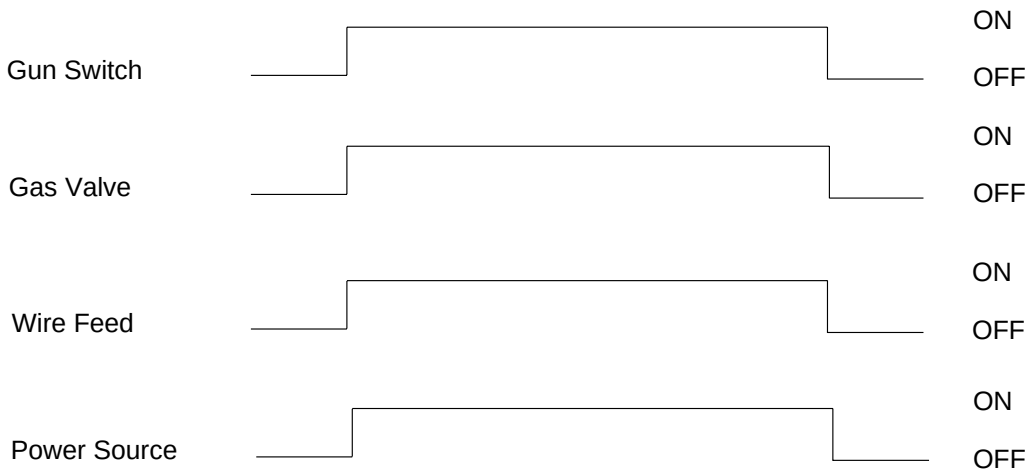


Figure 5-1 Functional Timing Diagram

Welding Procedure:

WARNING: In semiautomatic or automatic wire welding, the welding wire, wire reel (if used), input guide, feed rolls, output guide, feedhead, and welding gun metal parts are all ELECTRICALLY "HOT".

Refer to Figure 5-1.

1. To start the weld, position the welding gun above the work piece and depress the gun switch trigger. The solid state control then enables the gas valve, wire feed motor, and power source.

2. To end the weld, release the gun switch trigger while pulling the welding gun away from the work piece. The solid state control then disables the gas valve, wire feed motor, and power source.

NOTE: After the weld is completed, it is recommended to pull the welding gun away from the work while releasing the gun switch. This allows the welding arc to partially extinguish at the work piece which reduces the arcing at the contactor contacts. Using this procedure will lengthen the life of the contactor contacts especially when welding at high amperage.

3. At the end of the work day or when welding has been completed, it is recommended that the gas be SHUTOFF at the cylinder, and the wire feeder and power source be turned OFF.

Welding In CC Mode vs. CV Mode:

Refer to the CC/CV Mode Switch located in the Internal Controls And Connections section of this manual for further details.

WELDING IN CC MODE

When welding with a constant current (CC) power source, changes in wire feed speed will affect welding voltage.

To adjust the amount of welding current from the CC power source, a control knob on the power source or an "optional" control knob on the wire feeder will have to be adjusted.

The solid state control of a "slow run-in" circuit automatically reduces the initial wire feed speed when operating with a CC power source. This initial reduction in wire feed speed will compensate for the high open circuit voltage associated with CC power sources and improve arc starting performance.

WELDING IN CV MODE

When welding with a constant voltage (CV) power source, changes in wire feed speed will affect welding current. Changes in wire feed speed can be obtained by adjusting the wire feed speed control knob.

To adjust the amount of welding voltage from the CV power source, a control knob on the power source or an "optional" control knob on the wire feeder will have to be adjusted.

Theory Of Operation:

Refer to the Connection and Schematic Diagram in the Diagrams chapter of this manual.

Input power is supplied through the on/off switch (S1) and input circuit breaker (CB1) to the bridge rectifier (CR1). CR1 ensures that the proper polarity input voltage is fed into the p.c. boards independent of the welding polarity.

When the gun switch on the welding gun is pulled, a short is provided on the gun switch receptacle (J4) causing the wire feed motor (B1) to turn feeding wire, the gas valve (L1) to open allowing gas flow, and the contactor (K1) to close making the welding wire electrically "hot."

When the gun switch on the welding gun is released, the short on the gun switch receptacle is removed causing the wire feed motor to stop feeding wire, the gas valve to close stopping gas flow, and the contactor to open making the welding wire electrically "cold."

Adjusting Burnback Time:

Burnback time is set at the factory, but the motor control printed circuit board contains a component that permits adjustment of burnback time.

Burnback time relates to the amount of welding wire remaining at the end of the welding gun after the welding process ends. Increasing burnback time results in less wire remaining at the end of the welding gun at the end of the weld. Decreasing burnback time results in more wire remaining at the end of the welding gun after the welding process ends.

PROCEDURE:

WARNING: ELECTRIC SHOCK CAN KILL. Make certain the power source and wire feeder are both turned OFF before beginning the procedure.

1. Using a 1/4" nut driver or socket, remove the exterior cover to expose the motor control printed circuit board (See Figure 5-2).
2. Locate component R68 ("Burnback") on the motor control printed circuit board (See Figure 5-2). The best procedure is to make only slight adjustments until the amount of burnback is acceptable. Component R68 has a single turn (360°) range of adjustment.

To increase burnback time, adjust component R68 clockwise.

To decrease burnback time, adjust component R68 counterclockwise.

3. Replace the exterior cover.

Calibrating Wire Feed Speed Meter:

The motor control printed circuit board contains a component that permits calibration of the wire feed speed displayed on the analog meter. If the wire feeder was ordered with a wire feed speed meter installed, the meter was calibrated at the factory.

However, the wire feed speed meter will have to be calibrated or recalibrated if one of the following occur:

- A wire feed speed meter is installed in the field as an option.
- The motor control printed circuit board is replaced.
- The drive motor is replaced.

PROCEDURE:

WARNING: ELECTRIC SHOCK CAN KILL. While calibrating the wire feed speed meter, voltages as high as the open circuit voltage of the power source will be exposed. Use caution, and follow all instructions accordingly.

1. Place the CC/CV mode switch in the CV position.
2. Using a 1/4" nut driver or socket, remove the exterior cover to expose the motor control printed circuit board (See Figure 5-2).
3. Adjust the wire feed speed control knob to position 5.
4. Cut off the welding wire at the tip of the welding gun.
5. Depress the inch switch or the gun switch on the welding gun for exactly 15 seconds.
6. Cut off the welding wire at the tip of the welding gun and accurately measure.
7. Use the formula below to calculate the wire feed speed in inches per minute (IPM):

$$\text{IPM} = 4 \times \text{Wire Length Measured In Step \#6}$$

(For Example: If 125 inches of wire feeds in 15 seconds, multiply $125 \times 4 = 500$ inches per minute)

8. Now, with the inch or gun switch depressed, adjust component R46 on the motor control printed circuit board until the analog meter displays the IPM calculated in Step #7 (See Figure 5-2).
9. Replace the exterior cover.
10. Place the CC/CV mode switch in the proper position (See "Internal Controls And Connections" section of this manual).

Protection And Safety Circuits:

The following protection and safety circuits come standard with this wire feeder and are designed to protect (by disabling the wire feeder) against unfavorable operation and/or equipment damage.

1. Undervoltage Protection - If the input voltage drops below the specified voltage range for an extended period of time, an electronic circuit will activate, and the wire feeder will not operate. The undervoltage protection circuit will automatically deactivate when the input voltage enters an acceptable range.
2. Overvoltage Protection - If the input voltage rises above the specified voltage range for an extended period of time, an electronic circuit will activate, and the wire feeder will not operate. The overvoltage protection circuit will automatically deactivate when the input voltage enters an acceptable range.

3. Input Current Protection - If the input current rises above the specified maximum input current for an extended period of time, the input circuit breaker will trip, and the wire feeder will not operate. The input circuit breaker will have to be manually reset if it were to trip.
4. Motor Overcurrent Protection - If the drive motor becomes locked or shorted, an electronic circuit will activate, and the motor will not operate. If this circuit activates, a light on the motor control printed circuit board labeled "Fault 2" will turn on (See Figure 5-2). The motor overcurrent protection circuit will have to be manually reset by placing the power switch on the wire feeder in the off position for at least 60 seconds.

CAUTION: If this protection circuit activates and the drive motor is not locked, the drive motor is most likely shorted and will have to be

replaced (See "Troubleshooting Guide" section of this manual).

5. Contactor And Gas Valve Overcurrent Protection - If the contactor or gas valve becomes shorted, an electronic circuit will activate, and both the contactor and gas valve will not operate. If this circuit activates, a light on the 12 VDC driver printed circuit board labeled "Fault 1" will turn on. The contactor and gas valve overcurrent protection circuit will have to be manually reset by placing the power switch on the wire feeder in the off position for at least 60 seconds.

CAUTION: If this protection circuit activates, the contactor or gas valve is most likely shorted and one or both will have to be replaced (See "Troubleshooting Guide" section of this manual).

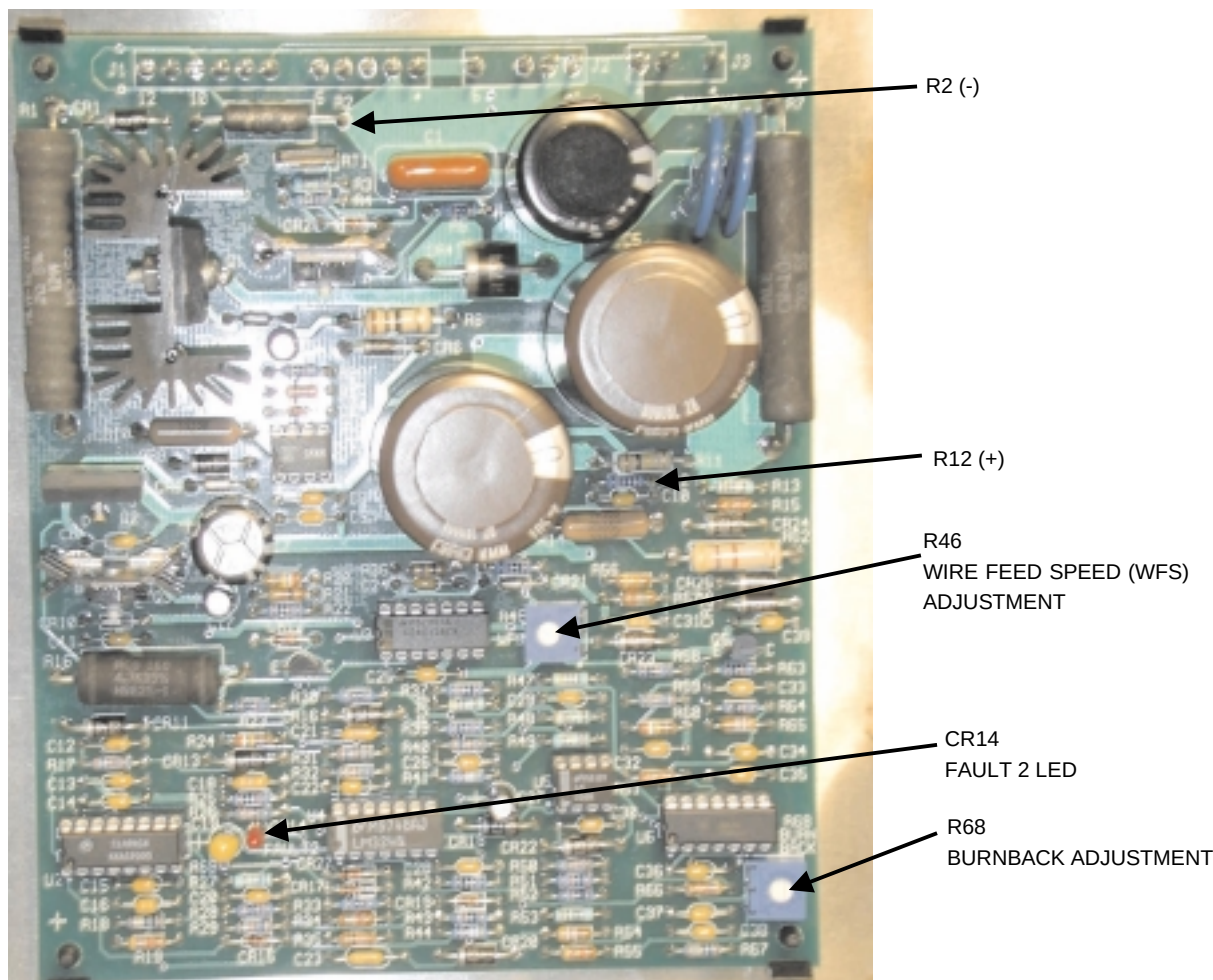


Figure 5-2 Motor Control Printed Circuit Board

MAINTENANCE

Cleaning Of The Unit:

About every 6 months, remove the exterior cover to expose the printed circuit boards and other components. Using a vacuum cleaner or clean, dry, compressed air of not more than 25 psi (172 kPa) pressure, vacuum or blow out the interior of the wire feeder. While the exterior cover is removed, check all electrical components for loose connections and correct if necessary.

Cleaning Of The Feed Rolls:

About every 3 months, clean the grooves on the feed rolls using a small wire brush. If the feed roll has a smooth surface, wipe off the feed roll with a clean, dry cloth. After cleaning the feed rolls, tighten the upper and lower feed roll retaining knobs accordingly.

Feedhead Maintenance:

See Figure 6-1 for details.

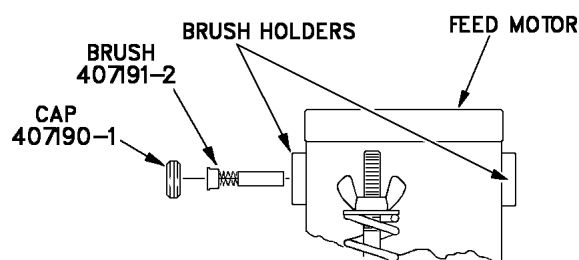


Figure 6-1

The only point of maintenance in the feedhead assembly is the motor brushes. Inspect these about every 400 hours of operation. When either brush is worn to about 1/4" (6.35 mm), both brushes should be replaced.

CAUTION: Neglect in brush maintenance may cause damage to the drive motor commutator resulting in a shorter motor operating life.

Contactor Maintenance:

Regularly examine the contacts on the contactor. When any contact is worn down to the copper bus bar, the contactor should be replaced.

Gas Valve Maintenance:

See Figure 6-2 for details.

Foreign material inside the valve body is the major cause of gas valve failure or improper operation. Foreign material usually enters the valve body when disconnected gas lines are allowed to come in contact with the floor or ground before being connected or reconnected to the gas valve.

In general, sluggish operation and/or gas leakage are signs the gas valve needs to be cleaned internally. To clean the gas valve internally, follow these simple steps:

NOTE: Before disassembly of the gas valve, take note of the orientation of inlet (marked IN) and outlet ports with respect to electrical connections. The reassembled gas valve should have the same orientation.

1. Remove input power from the wire feeder, and depressurize the gas valve.
2. Remove the gas valve from the wire feeder.
3. Remove the (2) bracket screws and bracket from the yoke of the gas valve.
4. Slip the yoke (containing coil) off the plugnut/core tube sub-assembly.
5. Remove the plugnut/core tube sub-assembly with the body gasket attached.
6. Remove the core assembly and core spring.
7. All parts should now be inspected for foreign material and cleaned with a lint-free cloth. Do not nick or scratch any internal parts of the gas valve.
8. Reassemble the gas valve in reverse order of disassembly paying careful attention to Figure 6-2.

NOTE: Tighten (2) bracket screws evenly to insure proper body gasket compression. Torque bracket screws to 20 inch-pounds.

9. Assemble the gas valve to the wire feeder.

NOTE: It may be necessary to apply pipe compound sparingly to the gas adapter male threads only. Do not apply compound to female threads of gas valve or first two threads of male fittings. Also, make sure the

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MAINTENANCE

inlet port (marked IN) side of the gas valve is connected to the main gas supply; otherwise, the gas valve will leak.

After maintenance, operate the gas valve a few times to be sure of proper operation. If the gas valve continues to show signs of improper operation, replace the gas valve assembly.

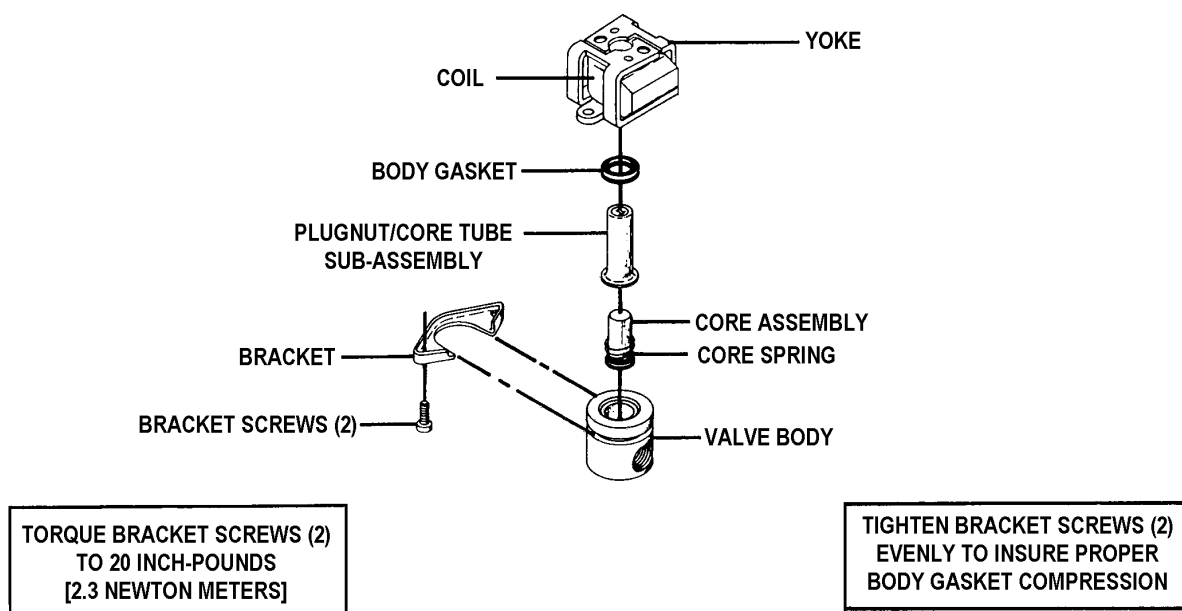


Figure 6-2 Gas Valve Assembly

TROUBLESHOOTING

Scope:

The troubleshooting guide is intended to be used by qualified service technicians. The troubleshooting guide contains information which can be used to diagnose and correct unsatisfactory operation or failure of the various components of the wire feeder. Each symptom of trouble is followed by a list of probable causes and the procedure necessary to correct the problem.

Safety:

To ensure safe operation and service, read this entire manual before attempting to service or repair this machine. The service technician may be asked to check voltage levels while the machine is turned ON; to assure safety, use care and follow all instructions accordingly!

Troubleshooting Hints:

Examine connections for proper assembly and contact before replacing an electrical component or printed circuit board. Wire lugs should be in tight contact with the lead's conductor and should be crimped to the lead's insulation. The mating surfaces of the connection should be clean and free of oxidation.

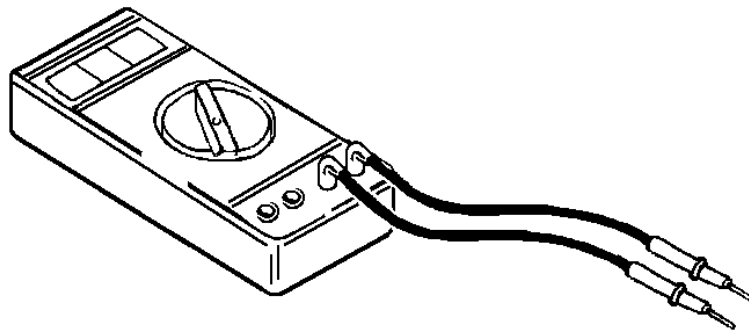
Before replacing a suspect printed circuit board, disconnect all wire plugs from the printed circuit board. Then, firmly reconnect all wire plugs to the printed circuit board and retest the machine to see if the problem persists. Faulty connections or wiring problems are often the cause of an equipment malfunction!

Do not pull on wires to disassemble connections. Firmly grasp each lug or connector when disconnecting. Pulling on wires for disassembly can damage the integrity of the connection and cause future malfunctions.

Prior to disassembly or servicing of the machine, note the wiring and connections in the machine. Reassembling should place the wires in the same location and routing as received from the factory. Keep wires and leads away from hot parts and sharp objects.

Most of the printed circuit boards in the machine contain static sensitive devices. Use a grounding strap or other suitable grounding means before attempting to service or make measurements on printed circuit boards.

All signals referenced in the following troubleshooting guide can be measured with a digital multimeter (DMM).



Troubleshooting Guide:

 WARNING		
	ELECTRIC SHOCK can kill. • Follow all safety precautions. • Do not touch live electrical parts. • Turn OFF input power before servicing the machine unless otherwise noted. • Only qualified technicians are to service the machine.	

 WARNING		
	CAUTION: Static sensitive devices. • Use static proof bags. • Use grounded wrist strap. • Use qualified personnel when testing or handling device.	

NOTES:

(1) Refer to the Connection and Schematic Diagram in the Diagrams chapter of this manual for graphical assistance in disassembling and troubleshooting the wire feeder.

(2) The acceptable tolerance (in most cases) on resistance and voltage measurements made with the DMM is $\pm 10\%$.

(3) Use only genuine replacement parts.

A. Unit is completely inoperative - nothing functions

Make sure all connections have been made to both the power source and wire feeder.

Make sure both the power source and wire feeder are turned ON.

Check 18 ga. wire connection on rear bus bar of the contactor for loose or faulty connections.

Check for a damaged power switch (S1).

Check for a damaged or tripped circuit breaker (CB1).

With input power supplied to the wire feeder, measure the DC voltage across the (+) and (-) terminals of the bridge rectifier (CR1). The measured voltage should be within 5 volts of the voltage on the output terminals of the power source.

If not, replace the bridge rectifier (CR1).

Check plug J1 on the motor control p.c. board for loose or faulty connections.

Replace motor control p.c. board if necessary.

B. Wire feed motor operates but wire does not feed or feeds erratically

Incorrect voltage/current and/or wire feed speed settings.

Make sure all connections to the wire feeder are tight.

Make sure feed rolls are tight.

Check for too little or too much pressure on the feed rolls.

See spring tension knob in the Description Of Feedhead Assembly section of this manual.

Check for correct feed roll size for welding wire being used.

Check to see if wire spool tension is too great.

See hub tension bolt in the Internal Controls And Connections section of this manual.

Check for restriction in welding gun and/or contact tip.

Check for correct gun liner and contact tip sizes for welding wire being used.

C. Wire wraps around the feed rolls

Check for too much pressure on the feed rolls.

See spring tension knob in the Description Of Feedhead Assembly section of this manual.

Check alignment of input and output guides.

Check for correct gun liner and contact tip sizes for welding wire being used.

D. Wire does not feed with gun switch depressed

Check for continuity of the welding gun trigger leads with the trigger depressed.

If no continuity, repair or replace the welding gun.

Check the gun switch receptacle (J4), terminal strip (TB1), wire feed motor (B1), and plug J1 on the motor control p.c. board for loose or faulty connections.

Check for a locked or shorted motor.

An electronic protection circuit may have activated.

Reset by placing power switch in the off position for at least 60 seconds.

Check wear on motor brushes.

See Feedhead Maintenance in the Maintenance chapter of this manual.

Replace motor control p.c. board if necessary.

E. Wire feed motor continues to run after gun switch has been released

Check for shorted welding gun trigger leads while the gun switch on the welding gun is released.

If shorted, repair or replace the welding gun.

Check for a shorted gun switch receptacle (J4), terminal strip (TB1), or plug J1 on the motor control p.c. board.

Replace motor control p.c. board if necessary.

F. No wire feed speed (WFS) control

Check for a loose WFS control knob.

Check potentiometer (R1) and plug J1 on the motor control p.c. board for loose or faulty connections.

With input power supplied to the wire feeder, measure the DC voltage on the motor control p.c. board from the right side of R12 (+) to the right side of R2 (-) (See Figure 5-2). While varying the wire feed speed knob from minimum to maximum, the voltage should change from approximately 0.25 to somewhere between 2.75 to 5.75 depending on the input voltage.

If not, replace the wire feed speed potentiometer (R1).

Replace the motor control p.c. board if necessary.

G. Wire feeds but no gas flows

Check to see if the gas cylinder is empty or the valve closed.

Make sure proper gas flow rate has been set.

Check for a possible restriction in the gas line or gas valve.

Check to see if the welding gun nozzle is plugged.

Check gas valve (L1), terminal strip (TB1), plug J1 on the 12 VDC driver p.c. board, and plug J3 on the motor control p.c. board for loose or faulty connections.

With wires disconnected from the gas valve (L1), measure the resistance across the gas valve terminals. The resistance should be between 15 to 30 ohms.

If not, replace the gas valve (L1).

An electronic protection circuit may have activated.

Reset by placing power switch in the off position for at least 60 seconds.

Replace the 12 VDC driver p.c. board if necessary.

H. Gas flows all the time or leaks

Make sure all connections are tight.

Check for foreign material inside the gas valve.

See Gas Valve Maintenance in the Maintenance chapter of this manual.

I. Wire feeds, contactor closes, but welding wire is not hot - there is no arc

Make sure all connections have been made to both the power source and wire feeder.

Make sure the cable between the contactor and feedhead is properly connected.

If using a CV power source, make sure the output contactor has been energized.

See "Prewelding Procedure" section in this manual.

Check to see if the contactor contacts are excessively worn.

Replace contactor assembly.

J. Wire feeds, contactor does not close, and welding wire is not hot - there is no arc

Check contactor (K1), terminal strip (TB1), and plug J1 on the 12 VDC driver p.c. board for loose or faulty connections.

With the contactor (K1) wires disconnected from the terminal strip (TB1), measure the resistance of the contactor coil. The resistance should be between 3 to 6 ohms.

If not, replace the contactor (K1).

An electronic protection circuit may have activated.

Reset by placing power switch in the off position for at least 60 seconds.

Replace the 12 VDC driver p.c. board if necessary.

K. Wire does not feed with inch switch depressed

Check inch/purge switch (S3) and terminal strip (TB1) for loose or faulty connections.

Check for defective inch/purge switch (S3).

L. Gas does not flow with purge switch depressed

Check inch/purge switch (S3) and terminal strip (TB1) for loose or faulty connections.

Check for defective inch/purge switch (S3).

M. Meters do not function

Check meters (M1 and M2) and plug J2 on the motor control p.c. board for loose, faulty, or reversed connections.

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PARTS LIST

Equipment Identification:

All identification numbers as described in the Introduction chapter must be furnished when ordering parts or making inquiries. This information is usually found on the nameplate attached to the equipment. Be sure to include any dash numbers following the Specification or Assembly numbers.

How To Use This Parts List:

The Parts List is a combination of an illustration (Figure Number) and a corresponding list of parts

which contains a breakdown of the equipment into assemblies, subassemblies, and detail parts. All parts of the equipment are listed except for commercially available hardware, bulk items such as wire, cable, sleeving, tubing, etc., and permanently attached items which are soldered, riveted, or welded to another part. The part descriptions may be indented to show part relationships.

To determine the part number, description, or quantity of an item, simply locate the item in question from the illustration and refer to that item number in the corresponding Parts List.

SPECIFICATION NUMBER

100052-1

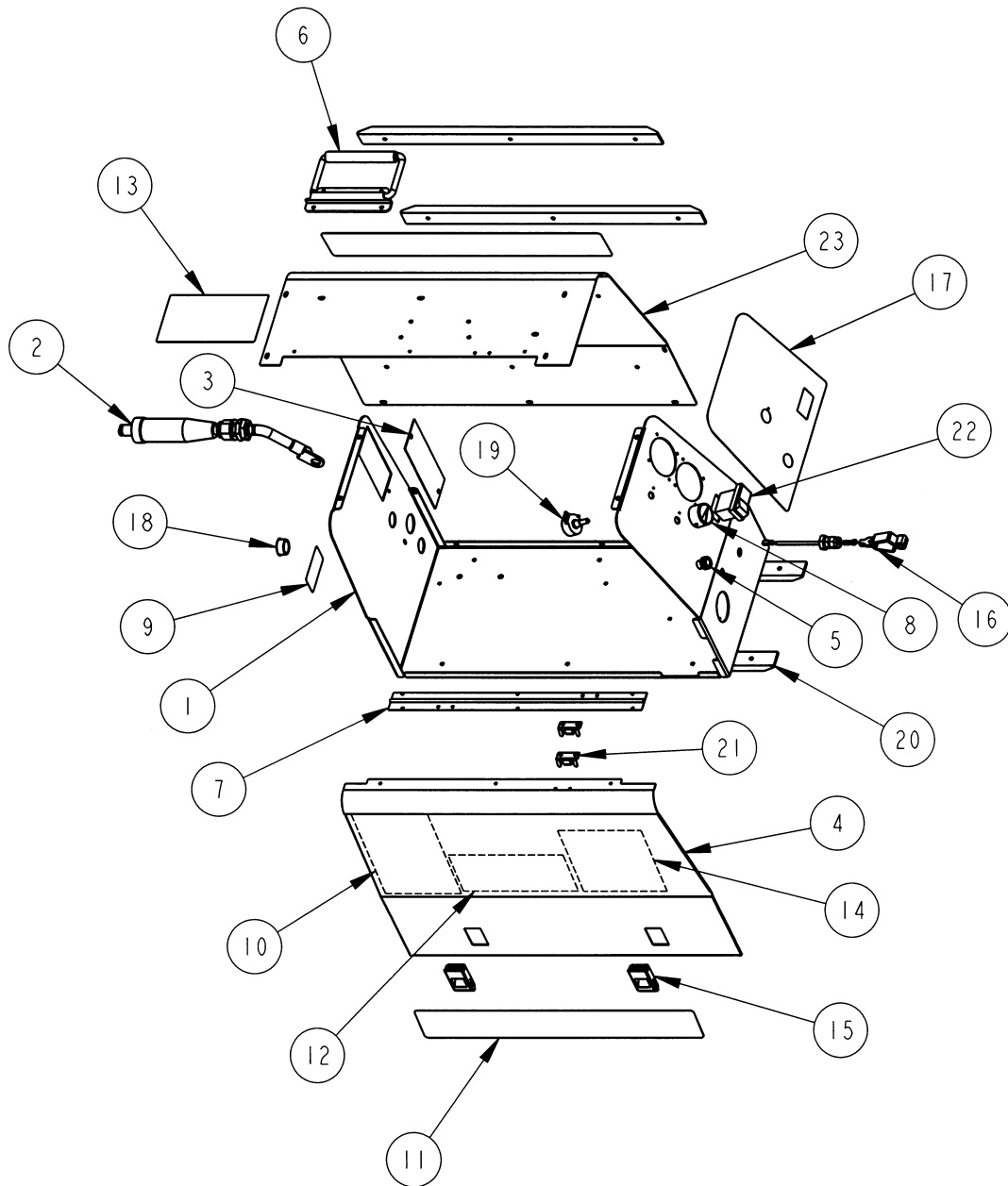


Figure 8-1

430429-456
PARTS LIST

ITEM	DESCRIPTION	PART NO.	REQ.	REF. DES.
1	BASE, HEFTY II STAINLESS	870271	1	
2	CABLE, INPUT	870262	1	
3	COVER, PLATE	870274	1	
4	DOOR	870273	1	
5	GROMMET RUBBER .38 ID	402037-004	1	
6	HANDLE, RUBBER GRIP CARRYING	407849-001	1	
7	HINGE	870276	1	
8	KNOB CONTROL BLACK	406806-003	1	
9	LABEL, CAUTION, WELD CURRENT	409239	1	
10	LABEL, FEEDER	170101	1	
11	LABEL, HEFTY II STAINLESS	870252	2	
12	LABEL, P.C. BOARD PROTECTION	870136	1	
13	LABEL, PRECAUTIONARY, STATIC	204036	1	
14	LABEL, WIRE FEED SPEED CHART	870155	1	
15	LATCH, SLIDE, FLUSH MOUNT	830551	2	
16	LEAD, VOLTAGE SENSING	870261	1	
17	OVERLAY, WIRE FEEDER	870253	1	
18	PLUG HOLE .875" BLK	403091-014	1	
19	POTENTIOMETER, 2 W 10K	401428-001	1	RI
20	RAIL, HEFTY II STAINLESS	870275	4	
21	SPRING, DOOR RETAINING	407175-001	1	
22	SWITCH, ROCKER, SINGLE POLE	870128	1	SI
23	WRAPPER	870272	1	

Parts List for Figure 8-1

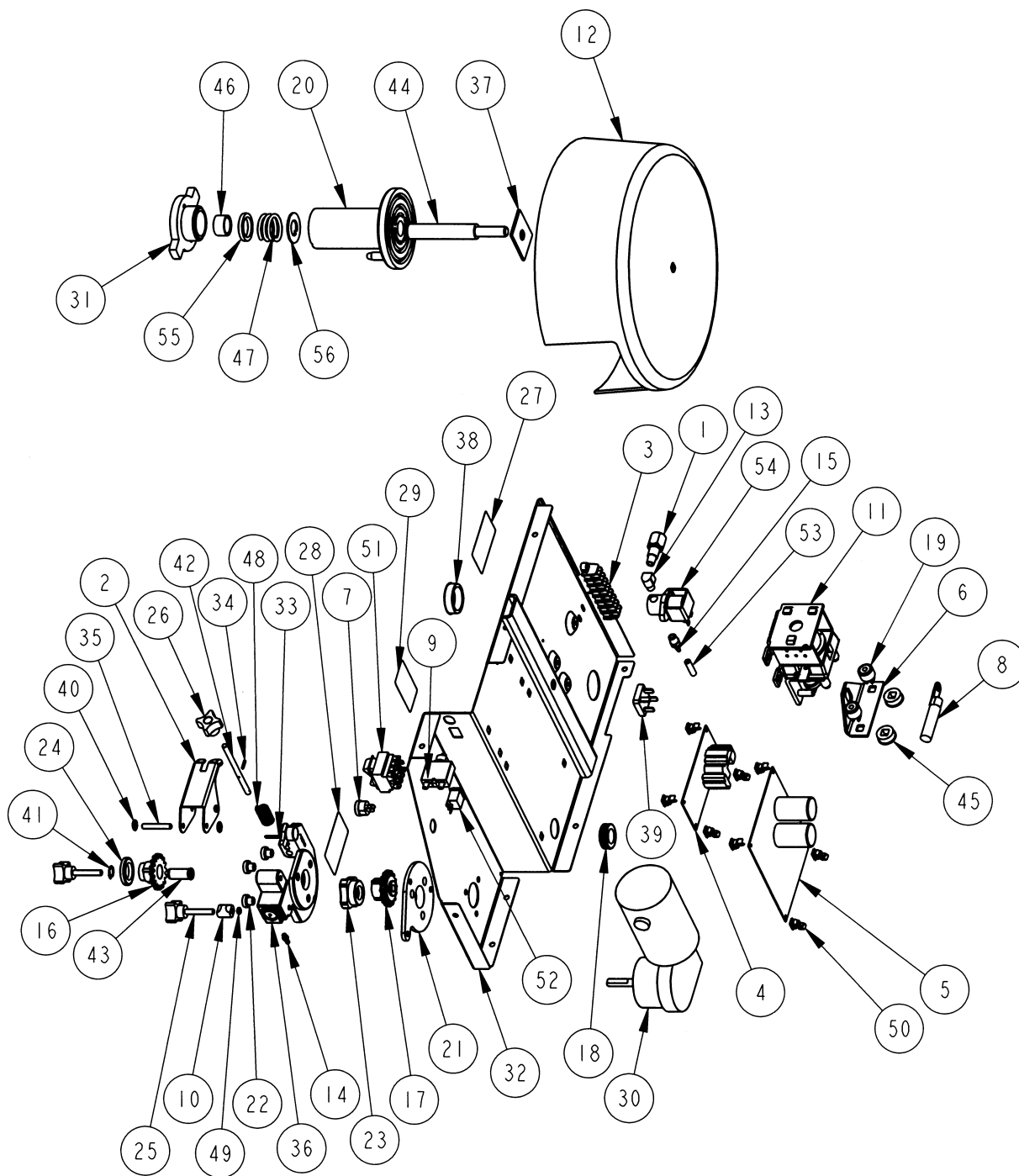


Figure 8-2

430429-456
PARTS LIST

ITEM	DESCRIPTION	PART NO.	REQ.	REF. DES.
1	ADAPTER, GAS, RIGHT HAND	200548-001	1	
2	ARM, PRESSURE	171273	1	
3	BLOCK TERMINAL 20A 8 STATION	401937-011	1	TBI
4	BOARD PC, 12V DRIVER	170046B-001	1	
5	BOARD PC, MOTOR CONTROL	376395C	1	
6	BRACKET, BUS	870277	1	
7	BUSHING, TERMINAL	405576-001	1	J4
8	CABLE, #11, ASSEMBLY	W9350-316	1	
9	CIRCUIT BREAKER PB 8 AMP	203627-008	1	CBI
10	CLAMP, GUN TUBE	171362	1	
11	CONTACTOR, 300 AMP	870133	1	K1
12	COVER, WIRE SPOOL, HEFTY II SS	406505-002	1	
13	ELBOW, STREET, 90 DEGREE, BRASS	W10892-001	1	
14	FITTING, BARBED	375298	1	
15	FITTING, BARBED, 1/8-27 NPT, PLASTIC	203846-002	1	
16	GEAR, IDLER ASSEMBLY	171358	1	
17	GEAR, INSULATED DRIVE	171356	1	
18	GROMMET RUBBER, .75 ID	402037-009	1	
19	GROMMET, MOUNTING, NYLON	409838	2	
20	HUB, WIRE SPOOL	405376	1	
21	INSULATOR, FEEDHEAD	171360	1	
22	INSULATOR, SCREW	171374	3	
23	KNOB, FEEDER	870011	1	
24	KNOB, FEEDROLL RETAINING	171377	1	
25	KNOB, RETAINING	171380	2	
26	KNOB, RETAINING	870082	1	
27	LABEL, ELECTRIC SHOCK	407099	1	
28	LABEL, MOVING PARTS	406636	1	
29	LABEL, WELD MODE/CIRCUIT BREAKER	870131	1	
30	MOTOR, ANGLE DRIVE GEAR	204994-001	1	B1
31	NUT, WIRE SPOOL HUB	170201	1	
32	PANEL, INTERIOR, HEFTY II SS	870280	1	
33	PIN, SLOTTED SPRING, .094 DIA	16DA1202-015	1	
34	PIN, SLOTTED SPRING, .094 DIA	16DA1202-016	1	
35	PIN, STRAIGHT	375300-001	1	
36	PLATE, FEEDHEAD	171271	1	
37	PLATE, WIRE SPOOL SUPPORT	376987-002	1	
38	PLUG HOLE 1.50" BLK	403091-007	1	
39	RECTIFIER BRIDGE 800V 35A	409554-002	1	CRI
40	RING, RETAINING, .25"	406314-001	2	
41	RING, SNAP, EXTERNAL, .500 SHAFT	16DA4249-005	1	
42	ROD, FEEDROLL TENSION	375301	1	
43	SHAFT, FEEDROLL	171359	1	
44	SHAFT, WIRE SPOOL	374546	1	
45	SPACER, NYLON MOUNTING	409837	2	
46	SPACER, SPOOL	374552-001	1	
47	SPRING, COMPRESSION	400562-027	1	
48	SPRING, COMPRESSION	400562-033	1	
49	SPRING, COMPRESSION	400562-048	1	
50	SUPPORT STANDOFF	171086-002	8	
51	SWITCH, 4PDT, ROCKER	407135-001	1	S3
52	SWITCH, ROCKER, SPDT	870116	1	S2
53	TUBE, WATER OR GAS	16DA3304-000	1	
54	VALVE SOLENOID, 12V DC, 75 PSI	404162-005	1	L1
55	WASHER, FRICTION	405448	1	
56	WASHER, STEEL, SPECIAL	374551	1	
A	BRUSH, MOTOR (SEE ITEM 30)	407191-002	2	
B	HOLDER, BRUSH (SEE ITEM 30)	407190-001	2	

Parts List for Figure 8-2

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DIAGRAMS

- Note the model and specification number shown on the equipment nameplate.
- Locate these numbers in the model and specification number columns below.
- Use only those diagrams and instructions that are applicable.

MODEL	SPECIFICATION NUMBER	CONNECTION & SCHEMATIC DIAGRAM	SYSTEM OUTLINE	FEED ROLL CHART
HEFTY II STAINLESS	100052-1	870256	170091	171435

STATEMENT OF WARRANTY

LIMITED WARRANTY: Thermal Arc[®], Inc., A Thermadyne Company, warrants that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the Thermal Arc products as stated below, Thermal Arc shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with Thermal Arc's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at Thermal Arc's sole option, of any components or parts of the product determined by Thermal Arc to be defective.

THERMAL ARC MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHERS, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: Thermal Arc shall not under any circumstances be liable for special or consequential damages, such as, but not limited to, damage or loss of purchased or replacement goods, or claims of customers of distributor (hereinafter "Purchaser") for service interruption. The remedies of the Purchaser set forth herein are exclusive and the liability of Thermal Arc with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by Thermal Arc whether arising out of contract, negligence, strike tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based. No employee, agent, or representative of Thermal Arc is authorized to change this warranty in any way or grant any other warranty.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH IN THERMAL ARC'S SOLE JUDGMENT MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY THERMAL ARC PRODUCT.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF THE PRODUCT IS SOLD TO PURCHASER BY NON-AUTHORIZED PERSONS.

Except with regards to the products listed below, this warranty shall remain effective three (3) years from the date Thermal Arc's authorized distributor delivers the product to Purchaser, but in no event more than (4) years from the date Thermal Arc delivers the product to the authorized distributor.

Shorter warranty periods apply to the products listed below. On these products, the warranty is effective for the time stated below beginning on the date that the authorized distributor delivers the products to the Purchaser. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date Thermal Arc delivered the product to the authorized distributor.

	<u>ALL OTHER</u>	<u>P-WEE, PRO-LITE</u>	
<u>POWER SUPPLIES</u>	<u>POWER SUPPLIES</u>	<u>PRO-PLUS, PRO-WAVE</u>	<u>LABOR</u>
MAIN POWER MAGNETICS (STATIC & ROTATING)	3 YEARS	2 YEARS	1 YEAR
ORIGINAL MAIN POWER RECTIFIER	3 YEARS	2 YEARS	1 YEAR
CONTROL PC BOARD	3 YEARS	2 YEARS	1 YEAR
ALL OTHER CIRCUITS AND COMPONENTS INCLUDING	1 YEAR	1 YEAR	1 YEAR
BUT NOT LIMITED TO, CONTACTORS, RELAYS,			
SOLENOID, PUMPS, POWER SWITCHING SEMI-CONDUCTORS			

ENGINES: ENGINES ARE NOT WARRANTED BY THERMAL ARC, ALTHOUGH MOST ARE WARRANTED BY THE ENGINE MANUFACTURER. SEE THE ENGINE MANUFACTURER'S WARRANTY FOR DETAILS.

<u>CONSOLES, CONTROL EQUIPMENT, HEAT</u>	1 YEAR	1 YEAR	1 YEAR
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EXCHANGES, AND ACCESSORY EQUIPMENT

<u>TORCH AND LEADS</u>	180 DAYS	180 DAYS	180 DAYS
<u>REPAIR/REPLACEMENT PARTS</u>	90 DAYS	90 DAYS	90 DAYS

Warranty repairs or replacement claims under this limited warranty must be submitted to Thermal Arc by an authorized Thermal Arc[®] repair facility within thirty (30) days of the repair. No transportation costs of any kind will be paid under this warranty. Transportation charges to send products to an authorized warranty repair facility shall be the responsibility of the customer. All returned goods shall be at the customer's risk and expense. This warranty supersedes all previous Thermal Arc warranties.

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